REMARKS

Claims 10-13 and new Claims 14-22 are active in the case. Reconsideration is respectfully requested.

The present invention relates to the production of mesophase pitch based active carbon fiber which is used in the construction of an electrical double layer capacitor.

Claim Amendments

New Claims 14-21 are supported by the text of the specification at page 19, last paragraph; page 21, lines 10-12; page 21, lines 19-23 and page 26, lines 9-20, respectively. New Claim 22 simply states that the electrodes are immersed in the electrolyte in the container as stated in Claim 11. Entry of the new claims into the record is respectfully requested.

Claim Rejection, 35 USC 112

The rejection of Claims 10-13 is obviated by the amendment made to each of the claims by which the term "gradually" has been deleted. Accordingly, the basis for the rejection is overcome and withdrawal of the same is respectfully requested.

Prior Art Rejection

Claims 10-13 stand rejected based on 35 USC 103 as obvious over Maeda et al, U. S. Patent 6,118,650. This ground of rejection is respectfully traversed.

Applicants have noted the Examiner's comments concerning what is known in the prior art, but respectfully submits that he has misstated what is known and what is unknown in the

prior art. The cited patent discloses in the cited patent a method of making a claimed capacitor. Applicants have indeed stated on page 33, lines 8-11 that methods of preparing electrodes of capacitors are known and are not particularly limited and that such conventional methods can be used in the present invention without modification. However, the Examiner has improperly "carried over" this statement to the charge/discharge treatment step of the process embodiments of the present claims by which the electrode, immersed in an electrolyte, is subjected to the charge/discharge treatment at constant current density at increasing voltage until the voltage exceeds 2.5 V up to 3.5V. (This treatment of the present invention is not to be confused with the repeated charge/discharge cycles that a capacitor is subjected to over the period of its use.)

The specification states on page 30 that it has been believed that an active carbon fiber of large specific surface area in which pores having a certain specific size which permit infiltration of an electrolyte are distributed in large amounts through the fibers is desirable for use as an electrode material in electric double layer capacitors. With regard to the mesophase based active carbon fiber that is used in the invention, it has been believed that the charge/discharge capacity per unit weight is highly associated with the specific surface area and pore distribution. However, in the process of achieving the present invention, it has been found that the mesophase pitch based active carbon fibers obtained in the activation step, when having a small specific surface area as measured by the BET method and when containing micropores having been regarded as unsuitable to the formation of an electric double layers in large amounts and thus having a small average pore radius that is calculated from the t-plot of a nitrogen absorption isotherm, exhibits a marked effect of increased charge/discharge

capacities in the charge/discharge treatment step. If this charge/discharge treatment step is repeated again, the resulting increase in the effect of the invention is not as high as obtained from the initial treatment, but substantially high charge/discharge capacities can be maintained thereafter under regular charge/discharge conditions.

It is not clear to applicants precisely what the mechanism is by which the charge/discharge treatment of the invention results in the improvement of the present invention since it does not appear that the charge/discharge cycle of the treatment results in a significant change in the specific surface area and the average pore radius of the active carbon fibers, it can be presumed that there is some change with respect to the structure and/or internal-surface properties of pores that have small radii as a result of the treatment. These pores of small radii may contribute along with the pores having larger radii so as to result in an electrode having a marked increase in charge and discharge capacities. (see pages 31 and 32 of the text) The specific treatment of the present invention is not shown or suggested by the Maeda et al patent.

It should be observed that applicants statement on page 33 of the text as to what is known applies to a process of manufacture such as the molding of an electrode such as described on page 37, lines 12 to 21 of the text. Such a molding operation may be achieved by conventional techniques. However, there is no description of the charge/discharge treatment of the invention in Maeda et al. Moreover, as to the method employed in Maeda et al of preparing mesophase pitch-based carbon fibers, the fibers are carbonized at a temperature of 350 to 1,000° C to an average particle diameter of 5 to 50 μm and then activated in the presence of an alkali metal compound. It can therefore be readily observed upon consideration of Claims 10 and 11 of the present case that the method of the reference is not at all identical to the

carbonization and activation steps of the process Claims 10 and 11, although with respect to carbonization there is overlap between carbonization temperatures. Again, however, as stated above, there is no teaching or suggestion of the charge/discharge treatment of the present process in Maeda et al.

It is now believed that the application is in proper condition for consideration for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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